

Electrification without friction

Tackling motorist and industry barriers
to EV adoption in 2022.



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Land and scapre

EV take up is booming in 2022 with BEV (Battery Electric Vehicle) sales in the first two quarters recording huge growth versus the same period in 2021.

March saw the highest volume of new BEV registrations ever recorded in one month at 39,315, a 78.7% increase YoY. The [SMMT](#) also reports year-to-date BEV registrations (as at June) of 115,249. This is a whopping 56% increase over 2021 and represents 14.4% of the current market share of all new vehicles, so the outlook appears rosy.

Yet, while the UK ended 2021 as the 2nd largest European market for volume of plug-in sales, it was only 6th place in terms of share of BEV sales against total new car registrations.

Research also suggests that the UK public is simply not yet ready for a mass switchover. That's despite current regulations which state that every new car in 2030 – less than eight years away – will have to be electric as new ICE, Diesel and some hybrid sales will be banned. One study reports that nearly half of motorists are not thinking about ditching petrol or diesel in the next decade, due to lingering concerns over battery range and charging.

In June 2022, CI&T ran its own survey of 1,300 motorists, including both EV and non EV drivers. Inside this report we examine the barriers and motivations for switching from our respondents, and highlight where infrastructure changes and digital innovation can improve the electrification customer journey. This includes areas for further cross-sector collaboration – between OEMs, EV service providers and energy companies – that could help accelerate the switchover.



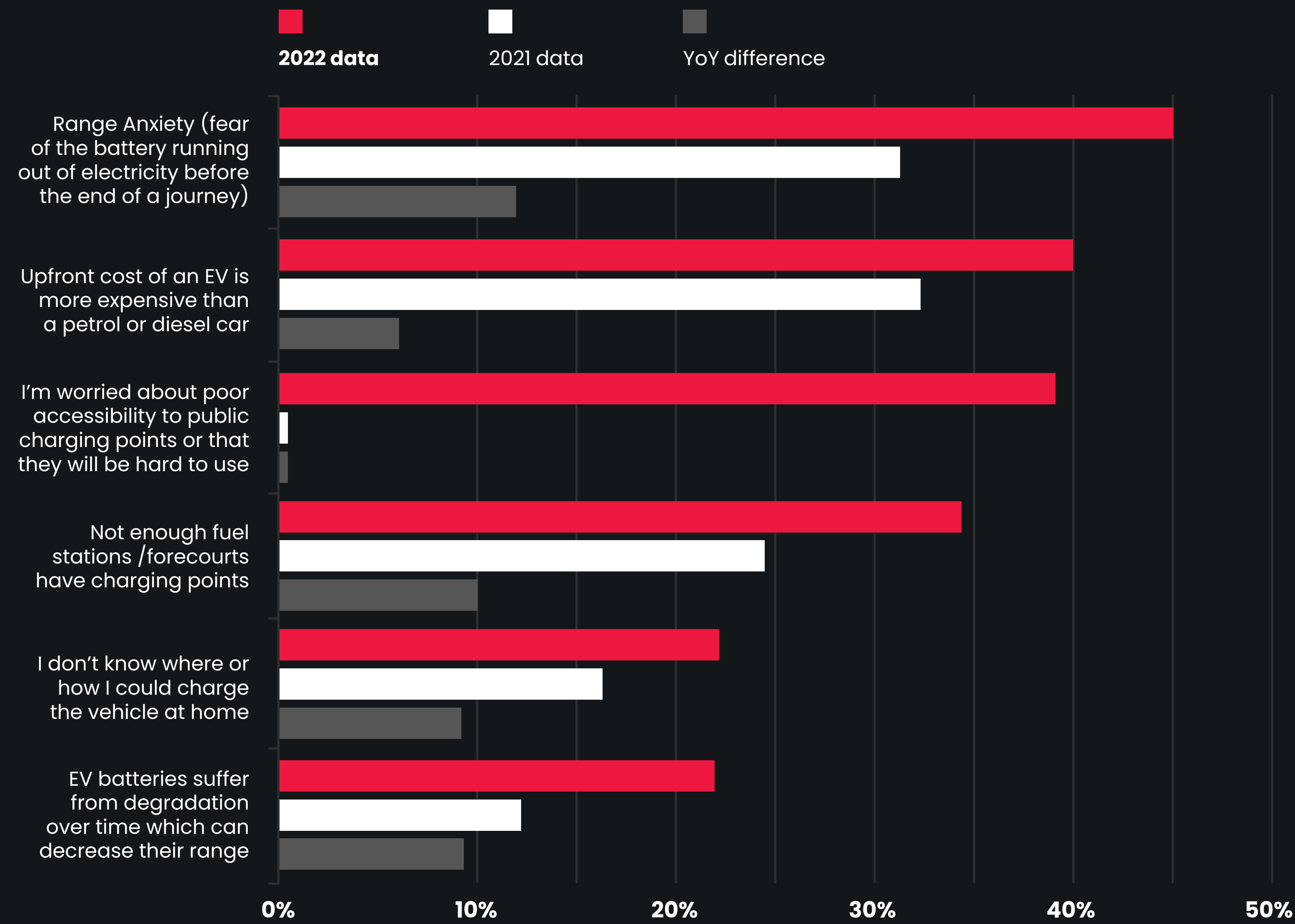
Charging & range are (still) the big anxieties

Charging and battery range fears are rising

When non-EV drivers were asked why they would choose not to go electric, battery and charging concerns took centre stage, which isn't surprising as the two go hand-in-hand. Range anxiety (fear of the battery running out) was the most common reason at 45%, a 13% increase from 2021.

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Chart 1: Reasons why non EV drivers are put off from getting an EV (top 6)



Meanwhile, worries over access to public charge points, a new topic in this year's research, was picked by 39%, with battery degradation at 37%. Significantly, nearly all 2022 figures are higher than 2021, highlighting that anxiety has amplified in 12 months. As EV adoption rises and the 2030 end point for petrol and diesel cars gets closer, perhaps this is not a huge surprise. So how can we help change these perceptions and avoid derailing the EV revolution?



Rise in charging and range anxiety

Concern over charging access and battery range in 2022 is up on average by 11%, compared to 2021.

Range anxiety – a myth that needs busting?

Carlos Tavares, CEO of Stellantis recently predicted that battery supply could be the [major bottleneck](#) facing the EV industry as soon as 2025. Demand is rising sharply, putting pressure on the supply chain for materials like lithium, cobalt and nickel. And this is despite the advent of “gigafactory” battery plants in Europe and large scale production efforts in the Far East.

While supply chain issues aren’t going away, battery manufacturers and OEMs are facing, in parallel, another tough challenge – convincing a sceptical public that low EV battery range is largely yesterday’s news and that there is strong evidence to prove this. According to the [electric vehicle database](#) the average range of an EV is now sitting at around 200 miles, a 15% improvement over recent years. In the UK, [the average car is driven only 20 miles a day](#), so current range levels are more than enough for most day-to-day needs and even the occasional long distance or seasonal holiday trip.

Battery technology is improving too. CATL, the world’s biggest EV battery maker recently unveiled a [new battery with 620+ miles of range](#), 50% more than a Tesla Model S. In April, the Mercedes-Benz concept car, Vision EQXX, completed a long distance non-stop test of over 1,000km in a road trip across several European cities.

Meanwhile [advances in Graphene based technology](#) suggest that this could become a more sustainable future alternative to lithium-ion batteries, offering less degradation, faster charging and potentially greater mileage range on a single charge due to its lighter weight.

Despite these enhancements, the non-EV driving public still carry deep-seated fears about battery range, rooted in misconceptions and human psychology.

Their perception is their reality, a reality the industry needs to help change. Part of the solution is through better marketing, PR and educational content to explode what has become a self-perpetuating myth.

Creating user friendly digital products that demonstrate the value of going electric is also critical. Some OEMs are doing this already, like [Volkswagen’s EV check app](#), which enables ICE motorists to drive their cars but show the journey data as an EV – the charge, the battery, nearby charge points and much more. Nonetheless, this type of innovation needs to be more widespread to help educate the public in real time about range and to better understand the suitability of an EV.

Meeting the charging challenge

The industry is doing what it can to close the gap. As of 1st April there were [30,290 EV public charging devices](#), 12,343 more than the same time last year, which is a 33% YoY increase. A further 400,000 charging devices are estimated to be [installed in UK homes and workplaces](#). One example of a key initiative within this roadmap is from Osprey Charging, who last year began a £75 million, 4 year plan to build [150 rapid charging hubs](#) across the UK. Another is Shell who opened its first dedicated charging hub in West London in January where existing fuel pumps were replaced with nine ultra-rapid 175kw charging points.

Earlier this year, the government also launched its new [Electric Vehicle Infrastructure Strategy](#), committing £1.6 billion to support the development of 300,000 public charge points by 2030. The strategy aims to “expand the UK’s charging network, so that it is robust, fair and covers the entire country – as well as improving the consumer experience at all charge points, with significant support focused on those without access to off-street parking, and on fast charging for longer journeys”.

A positive demonstration of this focus on CX comes from Connected Kerb, who in April, launched [Chameleon](#), a bollard style dual charger small enough to be installed in residential streets, solving a problem for motorists without driveways.

However, when you consider that less than two years ago, one third of all UK homes [did not have a driveway or garage to install a charger](#), the huge size of the task becomes apparent.

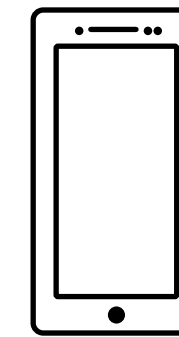
According to the SMMT, EV numbers increased fourfold between 2019 and 2021, yet, during the same time the number of public charge points grew by only 70%. Furthermore, the UK auto industry predicts that approximately 7 million cars on the road will be fully electric by 2030.

Last year, the SMMT forecasted that 2.3 million chargers are needed to meet this demand. So, it’s fair to say that the UK roll-out is well behind schedule and that EV adoption is currently outpacing the roll-out of public charge points.

This represents both a huge challenge and opportunity for OEMs, energy companies, infrastructure providers and government bodies to collectively meet such a critical target. But the challenge is not just about installing more chargers, it’s about empowering drivers to know that wherever they are, they have access to the right charger for their vehicle, and that it’s available, easy to book and will work.

This is where more digital-first solutions are needed to counter the perceptions of availability and reliability. Like that offered by on street concierge firm [Zumocharge](#) who charge your car on the street, while you sleep.

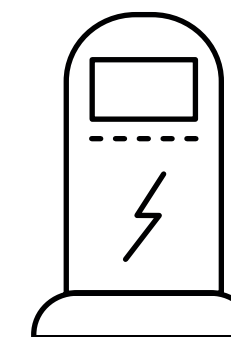
Opportunities for improvement



More digital integration and interoperability

Fragmentation of UK public charging (and also little coherence between being an energy customer charging at home and then being able to charge in public on the same accounts) means multiple accounts, multiple payment cards and a messy charging experience for most EV drivers today – a bit like parking your car in the UK.

[Zap Pay](#), a special feature of Zap Map, is trying to tackle the issue by aggregating multiple national charging networks within its app (including the likes of Osprey, char.gy and GeniePoint) to enable drivers to pay for all their charging sessions in one place. This form of digital interoperability is key to making the user experience for existing EV drivers more seamless and in turn helps to make the thought of switching to electric more attractive to non-converts.



Design charging points with inclusivity in mind

According to Graham Footer, chief executive of Disabled Motoring UK, [very few charge points are accessible](#) for the 2.3 million disabled motorists who it’s aiming to transition to EVs. From charging bays not having enough room, to the tech being hard to understand for those with cognitive learning problems, it’s evident that not all manufacturers are putting accessible design at the start of the build process.

One company that does is ZipCharge with its [GoHub innovation](#), the world’s first portable shared-use charging station which can turn practically any charging space into a charging spot and contains individual EV powerbanks which can be hired through the hub, or bought outright.

Flexible cost models are the future

Cost of ownership is still an issue

In a survey we carried out in 2021, high cost of ownership was the most common reason not to switch to an EV. In 2022, financial concerns are yet again a major barrier, further compounded by the arrival of a cost of living crisis that has impacted consumer spending behaviour across the board. 32% of respondents cited this year's higher energy costs as a blocker.

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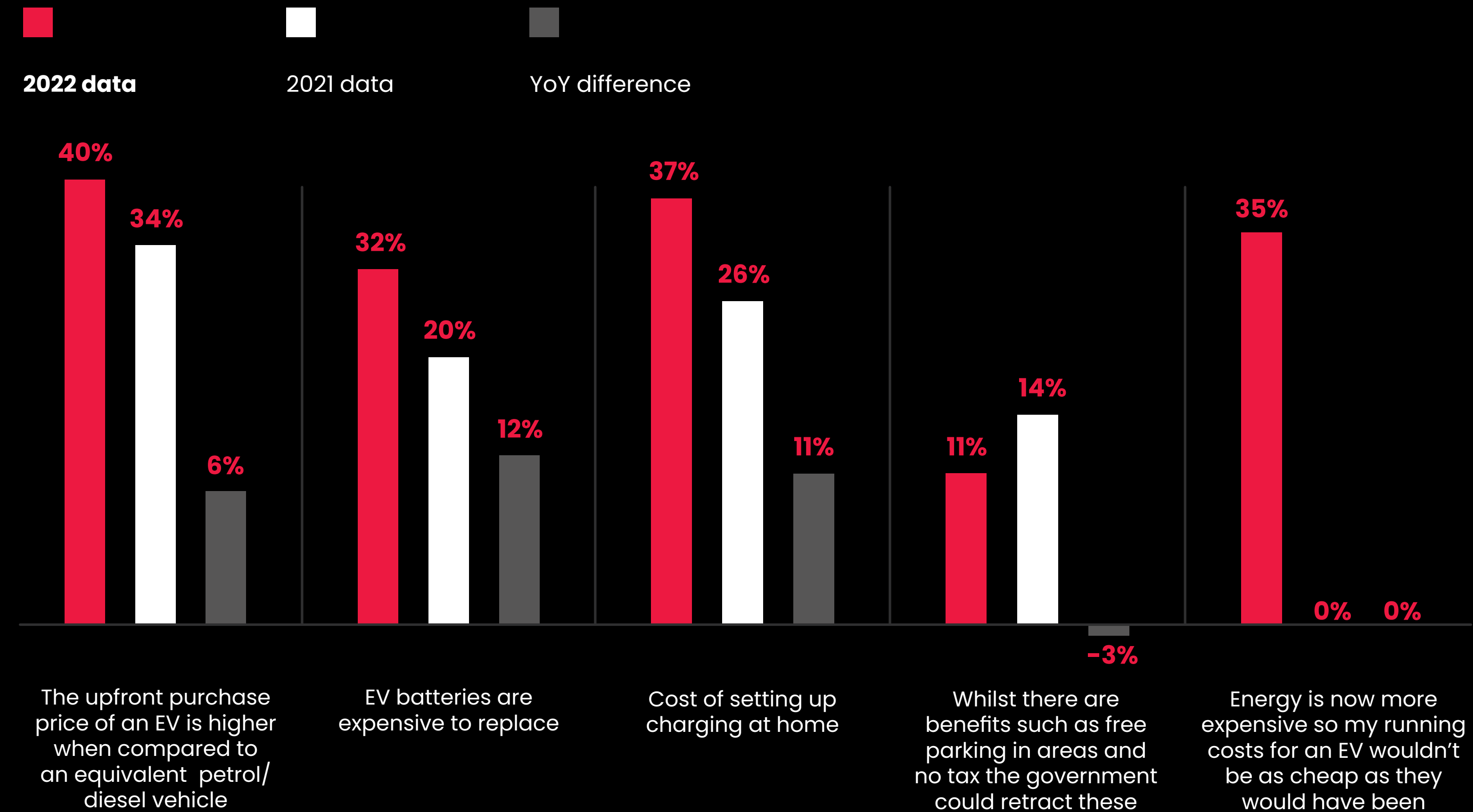


Chart 2

Cost reasons not to get an EV

It's not unreasonable to suggest that the crisis has amplified fears around affordability in 2022. Cost-led barriers are tracking much higher compared to 2021, with "expensive batteries" up 12% and the "cost of charging at home" up by 11%. These fears are backed up by recent data pointing to a 43% increase in the cost of charging a car at home and a 25% increase in on-the-road charges.

But, cost is a double-edged sword. Our research indicates that soaring fuel prices are also motivating many non-converts to consider electric. When asked about the most compelling incentive to switch, the most popular answer was the "increasing cost of petrol which means that charging is now much better value for money", selected by 54%. Close behind was "the prospect of having lower running costs versus a fossil fuel car" at 51.8%.





54%

of non EV drivers view the increasing cost of petrol & diesel as the most attractive reason to switch to electric.

Government pulls the plug on EV plug-in grants

Ironically, 33% of non EV respondents cited the government's £1,500 plug-in grant as another popular reason to switch. Ironical, because just after our survey was delivered, the [government announced they were scrapping the grant](#), in order to redistribute funds into charging initiatives instead.

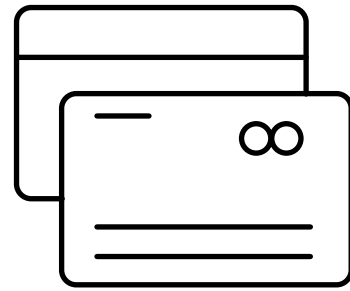
While the long term repercussions of this decision are unclear, fears over a driver backlash are mounting. In response to the move, Mike Hawes, SMMT CEO, felt it sent the "wrong message to motorists and to the industry", and pointed out that the UK is now the "only major European market to have zero upfront purchase incentives for EV car buyers yet the most ambitious plans for uptake".

Motorists want easier and cheaper ways to fund an EV

It's clear that with spiralling living costs and fewer available financial subsidies, petrol and diesel drivers need other reasons to convince them that EVs are value for money. When asked what changes might tip the scales, 17.9% claimed that easier and lower financial entry points to buy or hire an EV would most likely turn their heads.

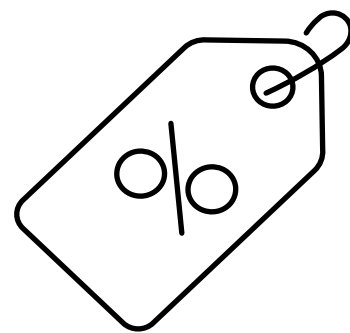
New entrants to the market are starting to answer these calls by offering innovative, alternative finance models. Like subscription service [Elmo](#) who claims to save drivers £1,500 in up front payment costs and provides a cheaper 'all-in' monthly fee including extras like maintenance, insurance and breakdown cover when compared to equivalent leasing deals. Or PAYG subscription specialist [Electric Zoo](#) who gives drivers flexibility by enabling them to sign up to hire a car for as little as one month or as long as two years.

Opportunities for improvement



OEMs must provide more flexible financing

To reassure a mass audience that EVs needn't be bought outright, or always come with high up-front costs, OEMs and dealers should give drivers more convenient digital-first finance options. For example, Volvo has been progressive in offering an EV subscription service with its '[Care](#)' product with no sign-up fee and then a three month rolling contract. However, apart from a few exceptions like Hyundai's Mocean, Genesis' Flexibility and Jaguar Land Rover's Pivotal, [other car makers are yet to follow suit](#) while Cazoo recently closed down its subscription service. Democratising ownership in this way can only mean more choice for drivers and go towards changing perceptions about affordability.



Get creative with pricing to incentivise conversion

Building on the partnership theme, the industry should consider testing innovative entry packages to prompt take up. As CI&T's Chief Growth Officer, Rebecca Crook suggests, "we need to see more tangible dual discount offers that are genuinely valuable for customers and brands. Like your energy provider partnering with a retailer or OEM and providing you, the customer, with a competitive discount on both the car purchase and charging at home."



OEMs and EV specialists should partner up to improve charging access

In March, Vauxhall announced an alliance with Onto, the all-inclusive EV subscription service to provide 700 Corsa-e and Mokka-e cars to Onto's fleet. More cross-sector partnerships are critical if the UK is to improve mainstream access to EVs and subsequently, the overall customer journey.

View from the front line

"Should you buy or subscribe to an electric car? Consumer demand for a more flexible lifestyle is now driving the shift from ownership to usership for EVs. There is a requirement for OEMs to make this more transparent to consumers rather than favour the model that provides more profit for them. The longer they do not offer all the options available for driving a car, the longer they will offer rise to the independents to drive the subscription sector to the fore.

It is smart thinking startups with innovative tech and easy entry pricing that allow drivers to get behind the wheel of an electric car with a minimum commitment. Surely something OEMs will have to follow sooner rather than later?"

- Lash Saranna, Co-founder & CEO, Electric Zoo





Bridging the gap between EVs and energy

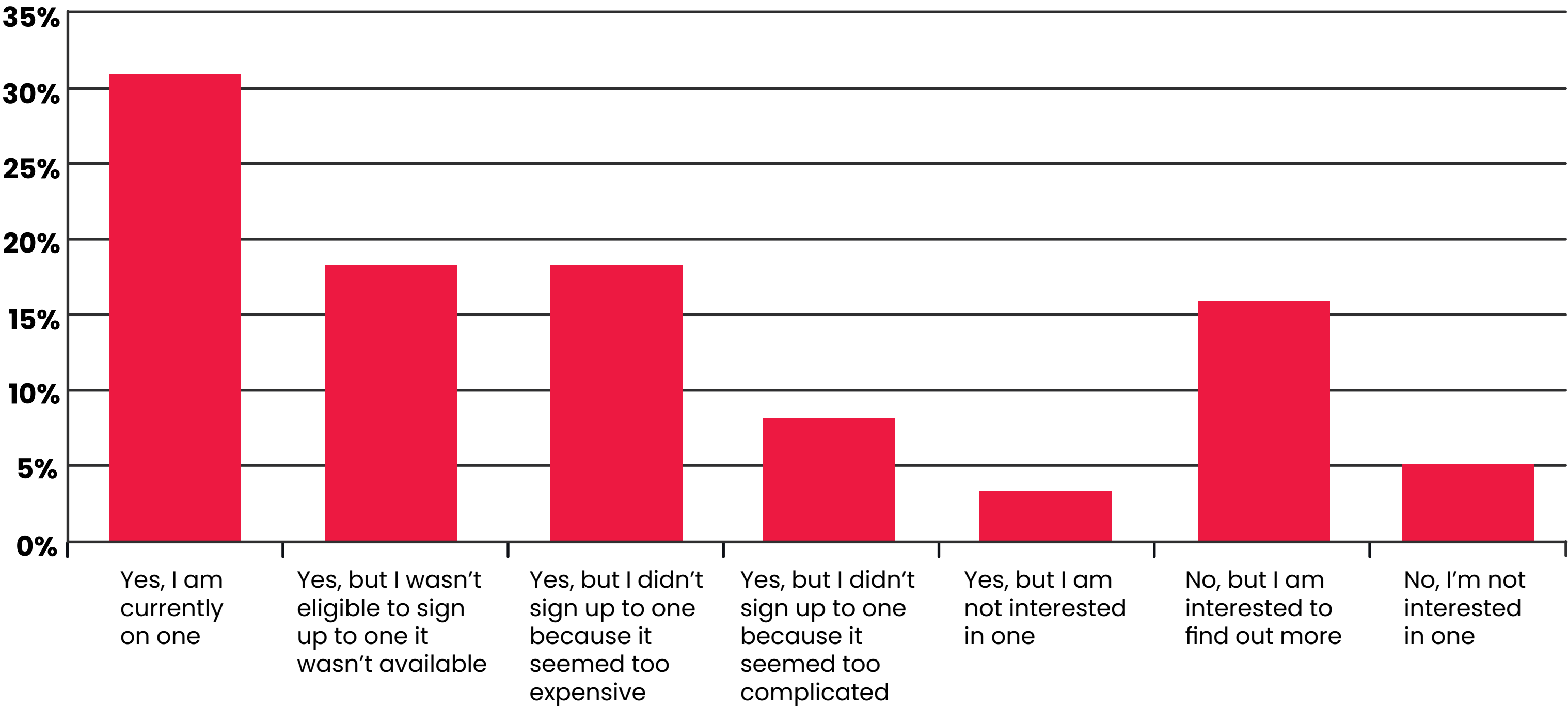
The EV Tariff conundrum

Getting an EV and the right energy tariff for charging one should go hand-in-hand. Or so you would think, however our survey suggests that there is an awareness and adoption barrier for EV tariffs. Over 20% of EV driver respondents didn't even know what they were and 23% claimed having an EV hadn't prompted them at all to change their energy tariff.

Meanwhile, when EV drivers were asked if they had ever come across an EV tariff from any energy company, only 31% said they were on one. Which means over two thirds aren't taking advantage of an EV tariff, citing reasons such as no eligibility or availability at the time of purchase, cost, the tariff being too complicated or a lack of interest.

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Chart 3: Have you ever come across an “EV tariff” from any energy companies?



EV ownership drives interest in alternative energy

There was, however, a positive correlation between alternative energy and EV consideration. Demand for installing products like solar panels, home battery storage and wind turbines has grown in the past few years not least because of high energy prices but also due to increased EV adoption. A [2019 study](#) revealed that 43% of UK EV drivers at the time also had solar panels but the rate is probably higher in 2022. From our survey, 52.4% of existing EV drivers were now more likely to consider installing a solar panel, with figures for domestic battery storage at 35.5% and wind turbines at 23%.



52.4%

of those who own an EV say it has made them actively consider investing in solar panels.

Early days for bidirectional charging

Perhaps the most transformative area for integration is bidirectional charging, more commonly referred to as V2G or V2H. V2G (vehicle to grid) involves using energy from your EV to stabilise the grid through a 'smart' bidirectional charger, which is usually part of a VPP (Virtual Power Plant). Meaning EV drivers can make money by charging their cars when energy costs less and sell back their unused energy.

In the UK, V2G is still in a predominantly testing phase but a project called [Electric Nation](#) has just been completed with positive results. Western Power Distribution (WPD) and Crowd Charge, a demand management provider, equipped the homes of 100 Nissan EV owners with V2G devices that charged and discharged their cars' batteries — and gave them a choice of four energy providers offering at least two different tariffs, including off-peak. Some participants reported making savings of £25 per month in selling surplus energy back to the grid.

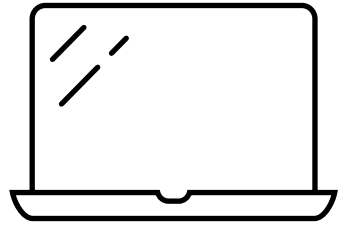
V2H (vehicle to home) means using your EV's energy to power your home or business. This is similar to how a stationary home storage battery (like the Tesla Powerwall 2) reduces grid consumption, except that your car needs to be plugged into a bidirectional charge point.

And like V2G there are economic benefits as you save money through 'load shifting' where your vehicle is charged with cheap off-peak energy or solar and discharged at more expensive peak times. In April this year, UK firm Indra announced plans to conduct the largest ever V2H trial involving 500 participants, another step in the Smart Charging revolution.

While bidirectional charging is clearly gathering pace, it still has its detractors who claim motorists can already benefit from lower tariffs by investing in the new generation of intelligent chargers that connect users with the cheapest tariffs as soon as they become available, rather than at predetermined hours.

Ohme, provider of the Home Pro intelligent charger promises a [potential £1,000 reduction in electricity costs](#), with commercial director Iain Walker claiming "the Home Pro already helps to balance demand by integrating with the grid in real time, which is smarter, cheaper and easier for drivers than V2G in its current form."

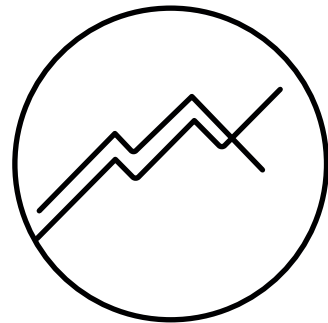
Opportunities for improvement



Make the association between energy usage and EVs clearer

While there is an obvious link between them, it's not widely understood by the public. The automotive and energy sectors must individually and collectively help consumers to navigate a complex electrification journey and embrace new themes like microgeneration, before developing new propositions. A case in point is EV tariffs – better marketing and communication about their benefits is needed across the end-to-end buying journey. Whether that's POS at a dealership, researching a car online, or when choosing an energy tariff over the phone.

More informative digital services like [Uswitch's Net Zero educational tool](#) which then go a step further by linking to brand products or services, can start addressing the gap and build loyalty.



Boost customer engagement about bidirectional charging

For smart charging solutions to become commercially viable, work needs to be done to scale the proposition, for example, reducing hardware costs. But perhaps the biggest opportunity is building knowledge amongst a UK public who know little about the technology or its benefits. Especially in the current climate where any incentive to cut living costs would be welcomed with open arms. Online experiences that bring to life bidirectional benefits through visualisation and real-time data would help raise awareness and appeal.

While the big energy and EV providers are promoting their V2G business solutions, few have taken their consumer propositions to the next level or talk in-depth and openly about their plans. A notable exception is Octopus Electric Vehicles who have recently expanded their [Powerloop](#) project.

View from the front line

"To excite and win customers we need more than just labels on existing tariffs. As soon as we create tangible benefits with these tariffs we will see a very different marketing and consequently, uptake of these offers.

As for the bidirectional opportunity, the growing number of EVs with their storage capacity creates huge potential. This capacity could be used to the benefit of energy transition as much as to the benefit of EV owners. Yet for this to happen, we need the systems to mature, more standardisation and a suitable regulatory framework."

- Oliver Schoen, Head of Go-to-Market, E.ON Next



Drivers want more digital tools

Digital aids for drivers

There are some elements of the EV ecosystem, like charge point installation, of which OEMs and EV retailers are not in control. Yet, one thing in their gift to give is the creation of digital tools and experiences that improve the driving experience and potentially increase customer loyalty.

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In our 2021 survey we identified high demand for digital products that would make EVs a more appealing proposition for both existing EV and non-EV users. This year's data reveals that interest in many of these tools is still high or in some cases has risen amongst both promoters (highly likely to engage) and detractors (less likely to engage).

A stand out example is a tool that shows how long a full-charge drive lasts and that maps where charge points are located on journeys that need them. 43% of respondents were promoters, a massive 18% increase from 2021, while only 17% were detractors, an 18% drop YoY.

Chart 4:

How likely are you to engage with a tool that shows how far you can drive on a full charge and helps you plan/map journeys if recharging is needed?

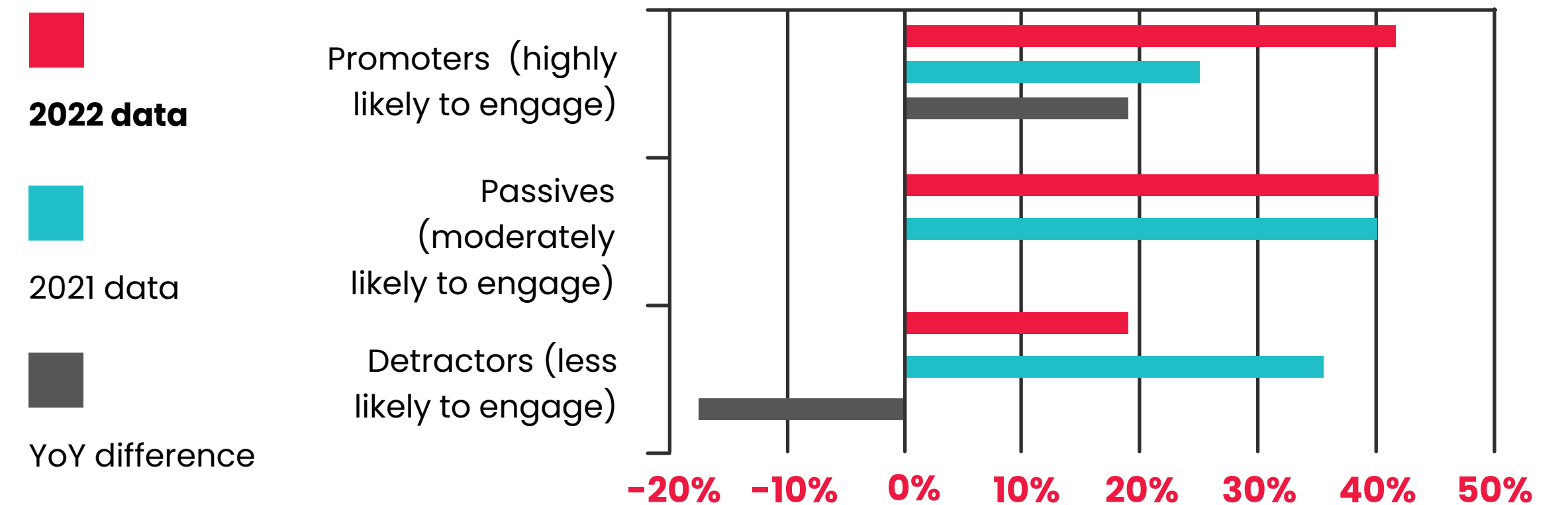
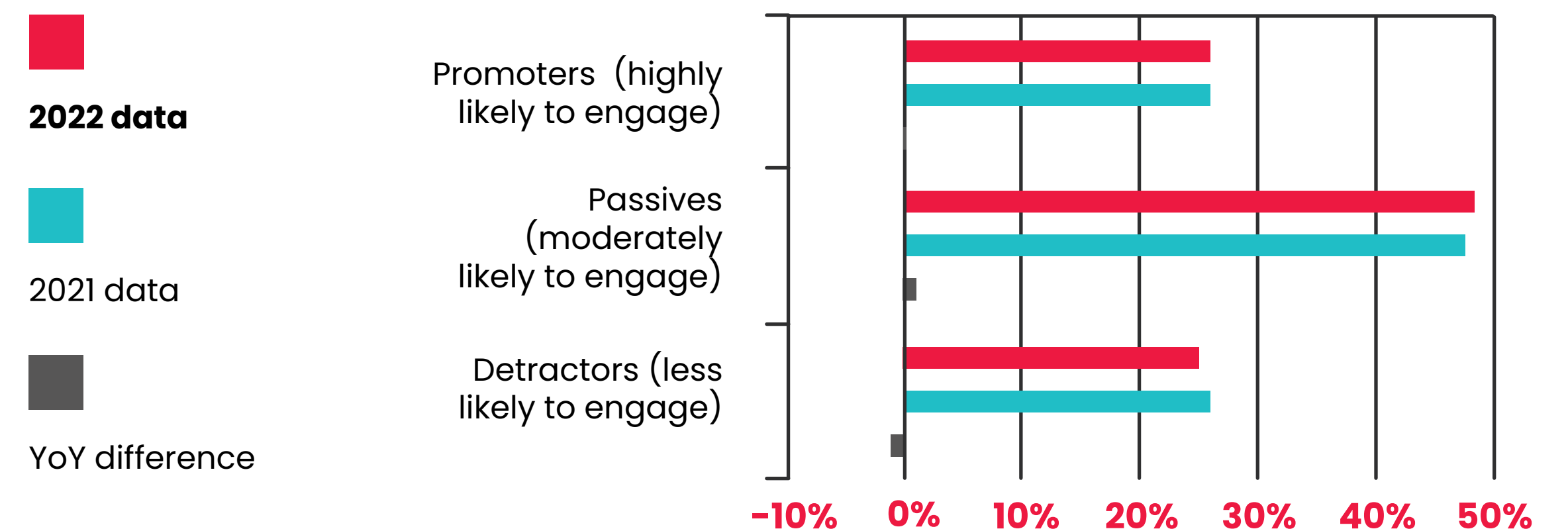


Chart 5:

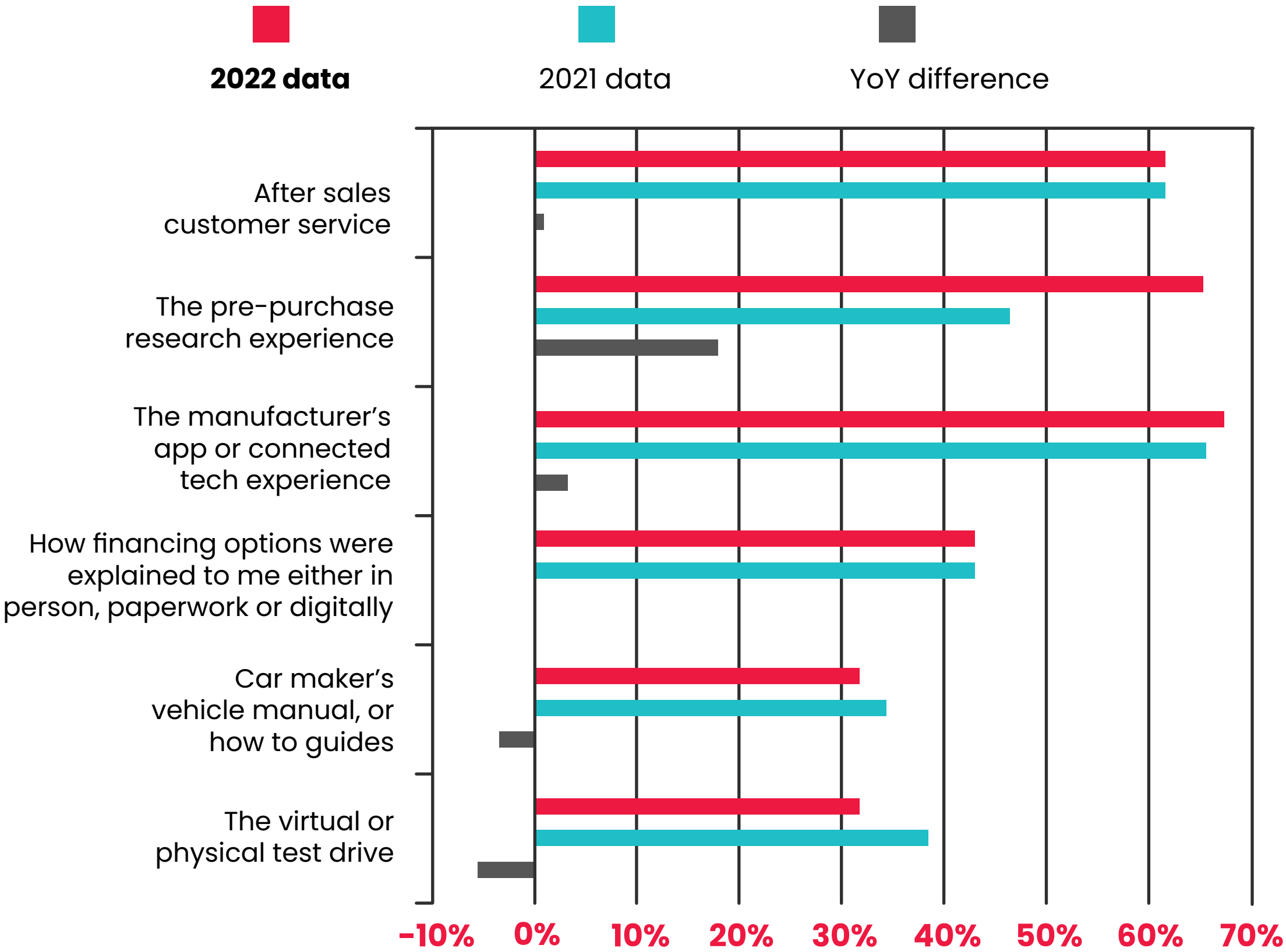
How likely are you to engage with a tool comparing performance and features between fossil fuel cars and EVs?



The EV buying journey shows room for improvement

Our research also dug into how dissatisfied or satisfied EV drivers were with the end-to-end buying experience. The findings reveal little positive trends in either direction within the last 12 months. Take the subject of vehicle content including driver manuals or how-to-guides, which respondents were slightly more dissatisfied with this year versus last. Or after sales customer service, which 62% of 2022 respondents were satisfied with, a figure that shows no improvement on 2021.

Chart 6:
Areas of the EV purchase experience which drivers were most satisfied with



Similarly, there is little improvement in satisfaction rates over the last 12 months when it comes to manufacturer apps and connected technology.

The problem with apps

When asked to rate 'out-of-car' or connected EV apps in our survey, only 34% of drivers thought they were at least on a par or better than equivalent tech from petrol or diesel cars. A much bigger 2022 US study by J.D. Power implies even more widespread user issues with mobile and app experiences. Their findings show that the "OEM App is the third most problematic attribute in the Initial Quality Study (IQS). 2021 IQS results show this issue is even greater for EV buyers than for ICE (internal combustion engine) buyers". Tellingly, EV owners reported "four times the number of problems with their OEM App compared to non EV owners, especially on connectivity"¹.

Equivalent data on UK OEM apps was unavailable at the time of writing but it's reasonable to suggest that the pain points EV drivers face with manufacturer apps in this country are not that different to the US, and that similar scope exists to make major UX enhancements in this area.

¹2022 J.D. Power OEM EV App Benchmark Study report.

CI&T case study

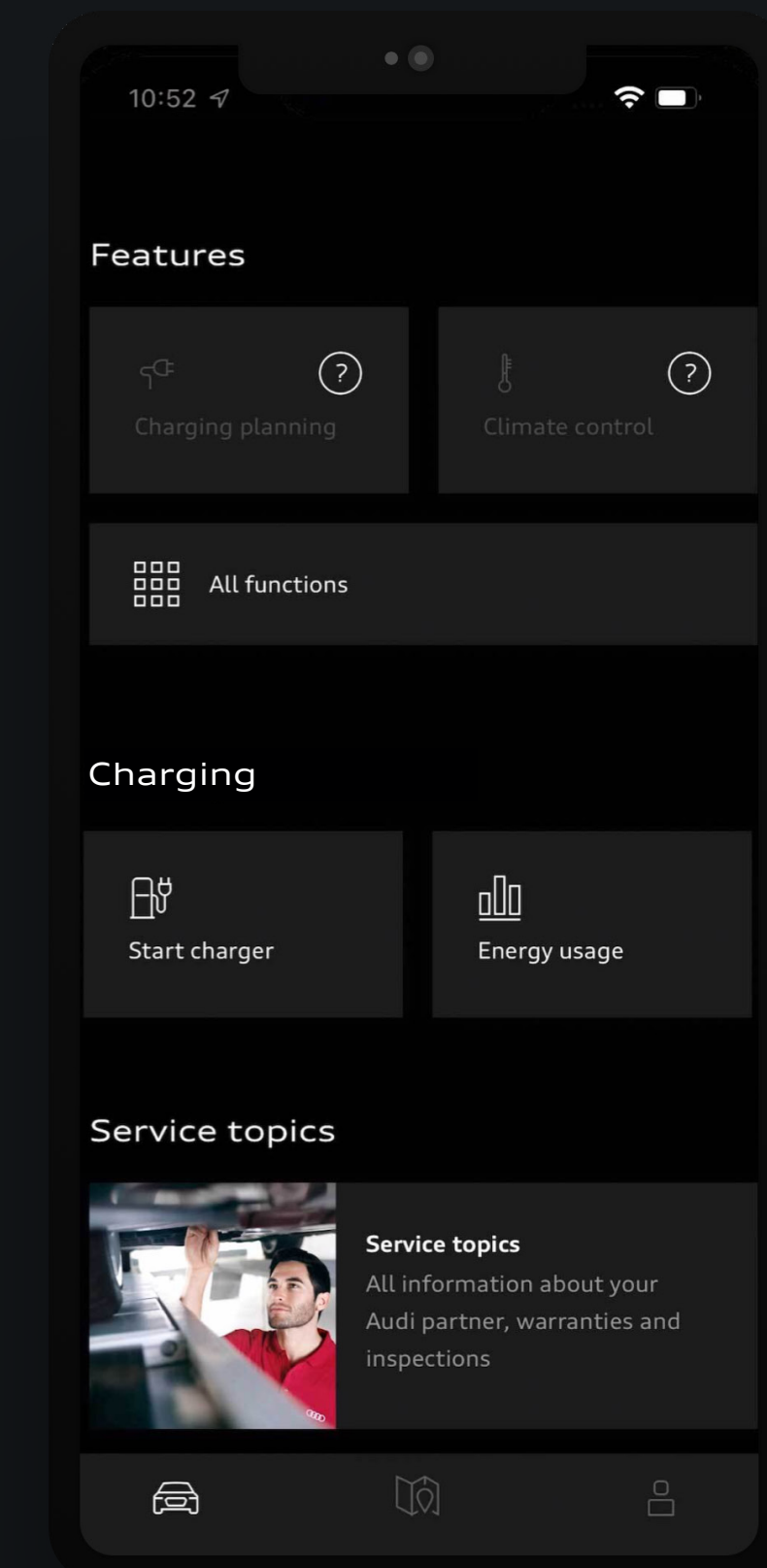
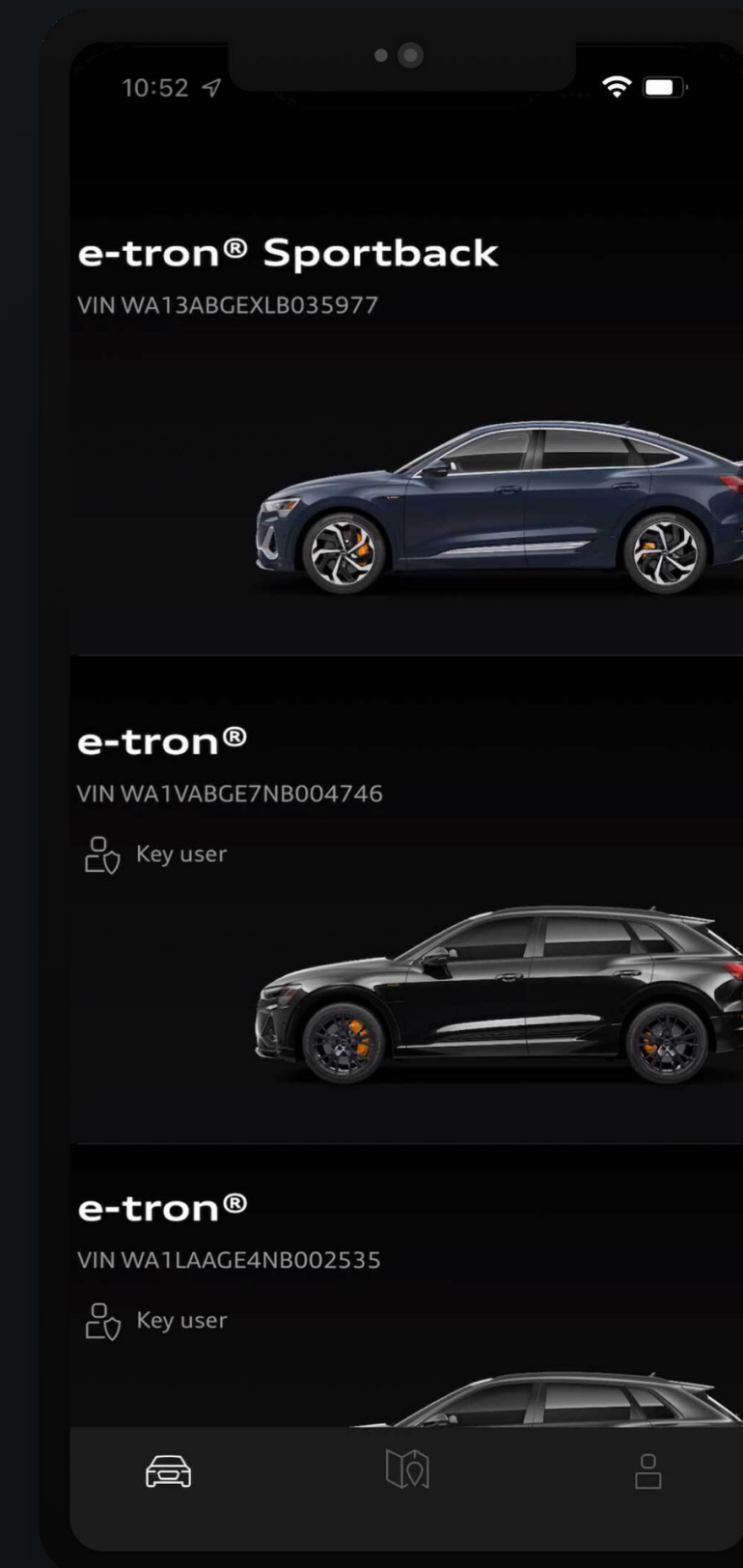
A premium app experience

for a premium brand

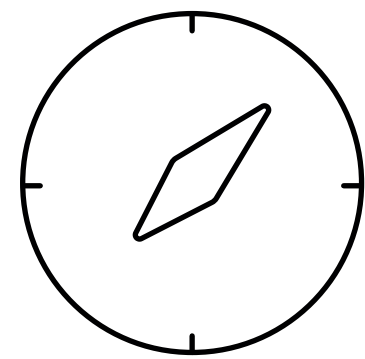
CI&T is Audi of America's digital agency of record and plays a key role in the evolution of its myAudi app. A huge milestone in this journey has been the development of Audi's Premium Charging Experience for EV owners, or PCE for short.

Our brief was to build a solution empowering e-tron customers to manage their charging experience through the myAudi app. In partnership with Audi of America, and working closely with Audi's global app teams, we delivered a fully operational digital product in just eight weeks. It enabled customers to enrol in the PCE programme, charge their car at designated charging stations, and view their energy credit balance and charging history.

We overcame many technical challenges, including setting up complex API integrations to customise the experience for EV users in America, as well as ensuring the back-end of the app could communicate easily with third-parties. The hard work and collaboration is now bearing fruit in the form of impressive customer engagement rates, with PCE enrollment at 78% and over 80,000 completed charging sessions to date.



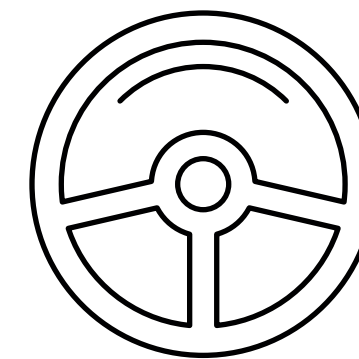
Opportunities for improvement



Develop better in-car tech to reduce range anxiety

Our survey reveals that EV drivers want tools that empower them to plan their journeys in advance. TomTom's Robin van den Berg attributes this to a basic need for peace of mind which can be delivered well before a journey even begins by integrating external and internal driving data with technology.

OEMs can “remove the psychological obstacle of range anxiety by helping drivers understand the best way to reach any destination”. They can develop more advanced car-tech like “in-dash navigation systems with connected services technology which tell drivers if their favourite destinations can be reached without having to recharge and shows the charging options available to them – which are based on compatibility with their vehicles and real-time availability of charging points”.



Do continuous user research on driver apps or tools

OEMs and their partners should not stop reviewing the customer experience after an MVP release or roll-out. As both our research and J.D. Power's study indicate, EV app products should be continuously improved, especially given their interconnectivity with other devices.

Establishing a regular schedule of testing to understand how customers use these products and identifying their pain points can help to build more sustainable UX solutions.



The CI&T sum-up

This report examines both the key challenges and opportunities for positive change which can help accelerate the EV revolution in the UK. Providing more accessible and inclusive charging; re-framing range anxiety; offering flexible ownership models; educating drivers on EV and energy interdependencies; and creating more digital tools.

There is also a red thread that unites these areas and that is a call for greater collaboration between all verticals who are part of the EV ecosystem — OEMs, dealers, energy firms and EV infrastructure companies.

It's not down to any one sector to optimise the EV customer experience, an experience that needs to be significantly more seamless and less fragmented for UK motorists than it is now.

05

The evolving role of digital in EV adoption

Ross Sleight, Chief Strategy Officer, CI&T

“Our research shows that there remain significant barriers to be addressed for non-EV drivers around perception and suitability of an EV, as well as multiple opportunities to improve the in-life journey for EV drivers. The current customer journeys are highly fragmented across multiple suppliers and this demands that customers take the initiative to research and source solutions at every stage, increasing the time, effort and cognitive load for EV customer journeys in comparison to petrol or diesel journeys.

As we move from customers who are early adopters into the mainstream majority over the next few years, these customer needs will only increase as the mainstream majority will not be as motivated to expend the time and energy that the current journeys demand.

Digital products have a major role to play to help reduce fragmentation and complexity for the customer, helping them to adapt to the behavioural changes that an EV demands and make the right decisions in their choice and in-life experience of an EV.

Collaboration between suppliers at every stage of the journey will be crucial to achieve this – ultimately suppliers need to think outside of their specific silos and think wider about how they can create a seamless, digitally-enabled journey for their customers.”



Get in touch



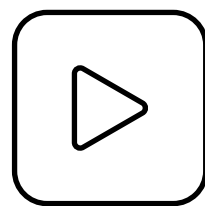
Working with key players in the automotive and energy sectors including Motability, cinch, SSE, Centrica, E.ON Next and Audi of America, we understand the challenges that lie ahead within the EV landscape as well as opportunities for innovation. For a quick chat about how CI&T can help fulfil your business' customer experience ambitions, contact Chris or Rebecca:

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About CI&T

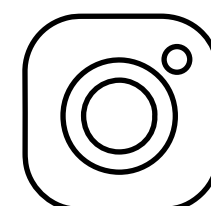
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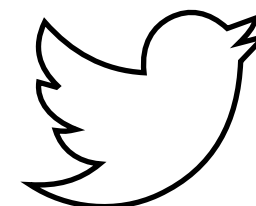
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